Daldionin, an unprecedented binaphthyl derivative, and diverse polyketide congeners from a fungal orchid endophyte.

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Abstract

Thailand possesses a rich diversity of orchid species that, in turn, live in symbiosis with a wide variety of fungi. Such endophytes have the potential to produce secondary metabolites with bioactivity against orchid and/or human pathogens. The orchid-associated fungal strain Daldinia eschscholtzii was found to produce a diverse range of aromatic polyketides including the new naphthalene derivatives daldionin, nodulones B and C, and daldinones F and G along with eight known compounds. Daldionin possesses an unprecedented oxane-linked binaphthyl ring system. These compounds demonstrate the high diversity of structural variations that are constructed during fungal biosynthesis, and the results include important observations concerning the biosynthesis of binaphthyl derivatives. Daldionin was found to have weak antiproliferative activity against HUVEC and K-562 cell lines. All but one of the isolated compounds showed moderate antimicrobial activity towards at least one of the four tested microbial strains.

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